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ORIGINAL ARTICLE **OPEN ACCESS**

Comparative performance of Brinjal (*Solanum melongena* L.) genotypes for qualitative traits under temperate condition of Kashmir.

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ABSTRACT
In the present investigation, comparative performance in fifty five brinjal genotypes (Parents and crosses) of brinjal (Solanum melongena L.) for qualitative traits was evaluated at the Experimental Farm of Division of Vegetable Science, Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Shalimar, Srinagar and significant differences was found among parents as well as crosses.
Key words: Brinjal, comparative performance, temperate condition.

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INTRODUCTION

Brinjal (*Solanum melongena* L.), (2n=2x=24) belonging to Solanaceae family, is one of the major and principle vegetable crops widely grown in both temperate and tropical regions of the globe. It has been known in India from ancient times and regarded as a native of Asia. It is a low calorie vegetable but a rich source of minerals which makes it ideal for diabetics, hypersensitive and obese patients. It is a rich source of phenolic compounds that function as antioxidant and help prevent cancer, cholesterol build-up and bacterial and viral infection besides being an important source of anthocyanin which have potent beneficial effect on a variety of health conditions like anti-inflammatory properties, which affect collagen and the nervous system, ability to protect both large and small blood vessels from oxidative damage including mitigating micro vessel damage from high blood-sugar levels that cause complications in diabetics [7-9]. Evaluation of genotypes (parents versus crosses) by estimation of mean performance *per se* especially for qualitative traits gives an idea about their suitability to a region to find out the best genotypes that can be recommended after further evaluation for the region.

MATERIAL AND METHODS

The experimental material for the present investigation consisted of ten diverse parental lines that were crossed in a diallel fashion during *Kharif* 2011 and 45 cross combinations were generated as per method II and Model-I of Griffing [6]. The parents and F_1 crosses were evaluated during *Kharif* 2012 in randomized complete block design with three replications at each of the three different locations viz., Vegetable Experimental Farm, Division of Vegetable Science, SKUAST-Kashmir, Shalimar (E_1), Mountain Research Center for Field Crops, Khudwani Anantnag (E_2) and Regional Research Station and Faculty of Agriculture, Wadura (E_3). The observations were recorded on dry matter (%), TSS (^{o}Brix), Vitamin C (mg $100g^{-1}$), anthocyanin (mg $100g^{-1}$), total phenols (mg $100g^{-1}$) and mean performance was worked out.

RESULTS AND DISCUSSION

The mean performance of ten parents and forty five crosses of brinjal for various quality attributing traits is given in table 1 which clearly indicated that genotypes differed significantly for all the traits under study.

Comparison of parents for qualitative traits revealed that SBW-11 recorded maximum dry matter of 9.04% followed by L.Long (8.18%) and PPL (7.31) and lowest dry matter percentage was recorded by PPC(6.03%). Among crosses PPC X L.Long recorded maximum dry matter of 8.71% followed by A,Nidhi x P.Kranti (8.60%) and PPC X SBW-11(8.51%) and minimum by PPC X GOB-1(4.08%). PPL recorded highest TSS of 7.22 ^{o}Brix followed by PPC (5.53) and lowest by A.Nidhi (3.73 ^{o}Brix) whereas among crosses P. Kranti x A.Kusumakar recorded highest TSS of 6.74 ^{o}Brix followed by SBPL -27X L.Long (6.29^{0} Brix) and A. Kusmakar x GBL-1(5.96 ^{o}Brix) and lowest in P.Kranti x GBL-1(3.38 ^{o}Brix). Vitamin C content was highest in SBPL-27(15.41 mg100g^{-1}) followed by PPC (15.08 mg100g^{-1}) and lowest by GBL-1 (11.50 mg100g^{-1}) whereas among crosses same was recorded highest in A.Nidhi x P.Kranti (18.88) followed by A.Nidhi x GBL-1(18.28) and A. Nidhi x GOB-1 (17.84) and lowest was recorded by PPC X A. Kusumakar (11.08). Anthocyanin content was recorded highest in SBPL-27 (0.85mg100g^{-1}) followed by P. Kranti (0.84 mg100g^{-1}) and lowest was recorded by A.Kusumakar (0.34 mg100g^{-1}) while among crosses highest anthocyanin content was recorded in A.Nidhi x PPL (2.33 mg100g^{-1}) followed by PPL X L.Long (1.86 mg100g^{-1}) and P.Kranti x L.Long (1.81 mg100g^{-1}) and lowest was recorded in A. Kususmakar x SBW-11(0.45 mg100g^{-1}). Total phenol content was highest by SBW-11 (105.92 mg100g^{-1}) followed by A. Kusumakar (94.66 mg100g^{-1}) and GOB-1(91.61 mg100g^{-1}) and lowest was recorded by PPC (73.89 mg100g^{-1}) whereas among crosses it was recorded highest in SBW-11 x L. Long (138.58 mg100g^{-1}) followed by SBPL-27 x L.Long (135.82 mg100g^{-1}) and A.Kusumakar x L.Long (135.71 mg100g^{-1}). These results are in agreement to those of Kumar *et al*. [5], Chadha *et al*. [2] and Bavage *et al.* [1]., Muniappan *et al* [9] and Islam and Uddin [4].

Table 1: Mean performance of genotypes for various qualitative traits in Brinjal (*Solanum melongena* L.)
(data pooled over environments)

S.No	Genotypes	Dry matter (%)	T.S.S (^{o} Brix)	Vitamin C (mg 100g^{-1})	Anthocyanin (mg 100 g^{-1})	Total phenol (mg 100 g^{-1})
1.	PPC	5.10	5.53	15.08	0.52	73.89
2.	A.Nidhi	6.03	3.73	14.49	0.68	80.99
3.	P.Kranti	6.28	5.10	14.61	0.84	80.83
4.	SBPL-27	6.47	5.38	15.41	0.85	91.45
5.	A.Kusmakar	6.30	4.23	13.68	0.34	94.66
6.	SBW-11	9.04	5.19	14.90	0.43	105.92
7.	GBL-1	6.42	4.49	11.50	0.65	91.19
8.	GOB-1	7.07	4.50	13.79	0.53	91.61
9. s	PPL	7.31	7.22	11.99	0.44	85.15
10.	L. Long	8.18	4.97	13.24	0.41	82.54
11.	PPC x A.Nidhi	6.19	4.35	14.16	0.95	90.27
12.	PPC x P. Kranti	6.37	5.65	15.98	0.63	88.57
13.	PPC x SBPL-27	7.09	4.70	14.84	0.60	84.62
14.	PPC x A.Kusmakar	7.52	4.73	11.08	1.05	79.39
15.	PPC x SBW-11	8.51	5.48	14.71	1.06	105.15
16.	PPC x GBL-1	7.47	5.02	12.95	1.05	102.34
17.	PPC x GOB-1	4.08	5.25	15.19	1.78	100.47
18.	PPC x PPL	7.51	4.11	14.08	1.06	113.86
19.	PPC x L. Long	8.71	3.69	14.84	0.57	92.04
20.	A.Nidhi x P. Kranti	8.60	4.28	18.88	1.30	94.92
21.	A.Nidhi x SBPL-27	6.29	4.16	14.90	0.96	87.02
22.	A.Nidhi x A.Kusmakar	7.78	3.60	14.86	0.50	99.57
23.	A.Nidhi x SBW-11	7.33	4.37	15.07	1.69	110.14
24.	A.Nidhi x GBL-1	7.58	4.09	18.28	0.87	113.87
25.	A.Nidhi x GOB-1	6.49	5.54	17.84	1.73	80.83
26.	A.Nidhi x PPL	6.27	4.71	14.52	2.33	112.06
27.	A.Nidhi x L. Long	6.23	4.01	14.66	1.74	110.19
28.	P.Kranti x SBPL-27	6.20	4.92	16.89	1.43	115.96
29.	P.Kranti x A.Kusmakar	8.02	6.74	15.00	1.40	117.07

30.	P.Kranti x SBW-11	6.07	5.46	16.93	1.32	127.12
31.	P.Kranti x GBL-1	6.83	3.38	15.34	1.76	111.96
32.	P.Kranti x GOB-1	8.19	3.49	14.96	1.51	115.75
33.	P.Kranti x PPL	6.32	4.47	14.81	0.48	122.36
34.	P.Kranti x L. Long	6.26	3.79	17.40	1.81	125.09
35.	SBPL-27 x A.Kusmakar	6.26	4.73	14.73	0.50	114.19
36.	SBPL-27 x SBW-11	6.26	3.82	14.64	0.44	121.84
37.	SBPL-27 x GBL-1	6.43	4.38	16.89	1.72	124.10
38.	SBPL-27 x GOB-1	7.54	4.34	15.63	0.83	130.26
39.	SBPL-27 x PPL	8.47	4.29	13.94	0.73	134.38
40.	SBPL-27 x L. Long	8.36	6.29	15.35	0.85	135.82
41.	A.Kusmakar x SBW-11	8.27	4.70	14.12	0.45	122.52
42.	A.Kusmakar x GBL-1	6.56	5.96	14.69	0.80	127.60
43.	A.Kusmakar x GOB-1	7.54	4.76	14.73	0.64	126.96
44.	A.Kusmakar x PPL	7.26	3.94	14.38	1.24	134.80
45.	A.Kusmakar x L. Long	8.13	3.92	15.70	0.83	135.71
46.	SBW-11 x GBL-1	6.12	4.81	14.03	1.08	108.86
47.	SBW-11 x GOB-1	6.31	4.44	12.77	1.02	128.27
48.	SBW-11 x PPL	7.62	3.71	14.05	1.24	135.02
49.	SBW-11 x L. Long	6.18	4.52	13.84	1.03	138.58
50.	GBL-1 x GOB-1	8.33	4.60	14.72	1.71	130.80
51.	GBL-1 x PPL	7.51	4.79	14.33	1.67	102.22
52.	GBL-1 x L. Long	8.24	5.17	14.71	1.08	115.89
53.	GOB-1 x PPL	8.41	5.09	13.87	1.33	109.61
54.	GOB-1 x L. Long	6.57	4.32	13.49	1.10	128.34
55.	PPL x L. Long	6.40	4.82	14.16	1.86	131.97
56.	**CV (%)**	**3.20**	**11.86**	**4.24**	**6.84**	**0.91**
57.	**CD at 5 %**	**0.36**	**0.89**	**1.01**	**0.11**	**1.62**

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